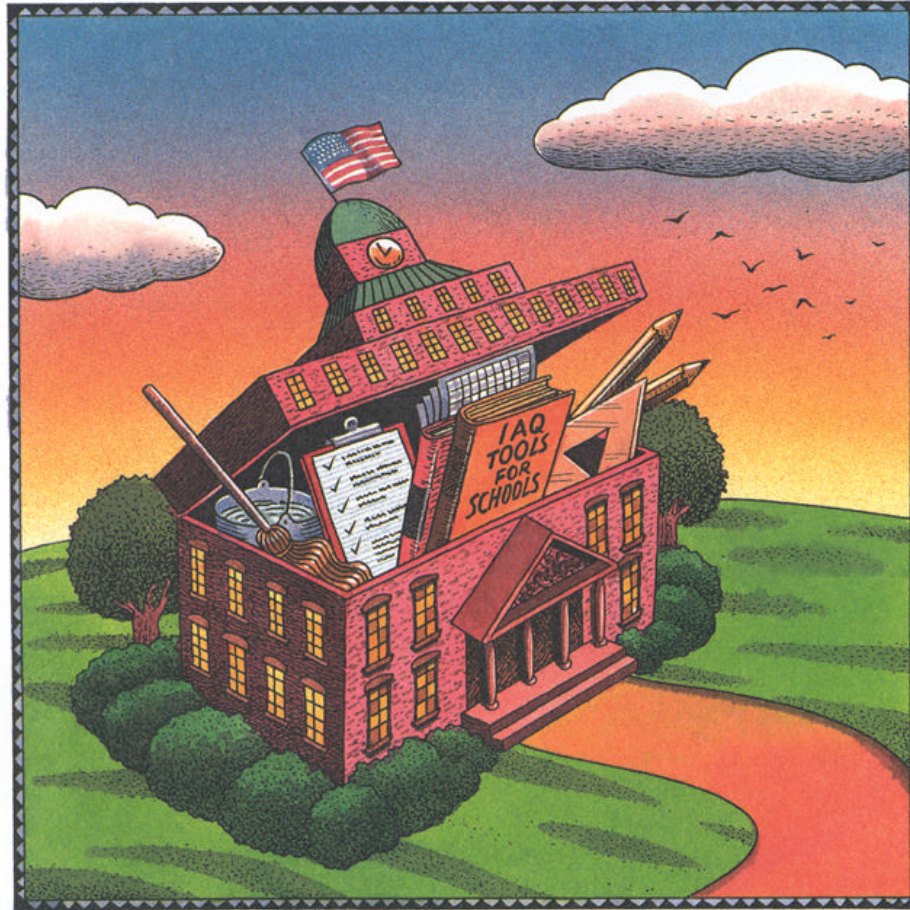


Indoor Air Quality



Tools For Schools

The U.S. Environmental Protection Agency's

IAQ Tools for Schools Action Kit



Is this Rocket Science?

A New Issue ... Right?

In the construction of buildings, whether for public purposes or as dwellings, care should be taken to provide good ventilation and plenty of sunlight. ... school rooms are often faulty in this respect. Neglect of proper ventilation is responsible for much of the drowsiness and dullness that ... make the teacher's work toilsome and ineffective.

Health Reformer, 1871

Ye Olde Issue

I am persuaded that no common air from without is so unwholesome as air within a closed room that has been often breathed and not changed.

Attributed to Benjamin Franklin

What do we add to our air?

*This is our totally enclosed room.
Doors, windows closed and no
ventilation.*

*Now let's add a few people, some
building furnishings, etc.*

What goes into the air?



I t wasn't me!

Why is I AQ important?

Americans spend about 90% of their day indoors - in classrooms, in offices, at home.

Pollution indoors is two to five times - and occasionally more than 100 times - higher than out door levels.

Why is I AQ important? (continued)

EPA, its Science Advisory Board and others consistently rank indoor air pollution among the top four environmental health risks facing the American people.

Agenda

- *Importance of I AQ*
- *Taking the I AQ Journey*
 - ✓ *Where are we?*
 - ✓ *Where do we want to go?*
- *Causes and Root Causes of I AQ Problems*

(continued)

Agenda (continued)

- *Photo walk-through*
 - ✓ *I identify root causes*
 - ✓ *Apply common sense solutions*
- *What's in the Tools for Schools Kit?*
 - ✓ *How does it address root causes?*

Who's the
geek?

Where is
he?

Where
does he
want to
go?



Understand What?

- 1. Everyone has to understand the importance of good indoor air quality.*

Poor IAQ can impact health and the ability of teachers to teach and students to learn.

Understand What? (continued)

- 2. Everyone has to understand that their typical activities can affect indoor air quality.*

Understand What? (continued)

3. *Everyone has to understand the importance of communication!*

Remember!

- 1. IAQ impacts health and ability to excel academically.*
- 2. Typical activities affect IAQ.*
- 3. People have to communicate.*

Take this home with you!

- *Indoor Air Quality is important!*
- *Especially for schools!*
- *We can do something about it.*
- *We have to do it now!*

Schools are unique!

- *Tight budgets* (ya think!?)
- *Densely populated space*
- *Old buildings / deferred maintenance*
- *Special sources of pollution*
- *“Inventive” space utilization*
- *Additions / Temporary space*

Consequences of Poor I AQ

- *Reduced learning and teaching*
- *Poor staff / parent relations*
- *Liability*
- *Health problems / complaints*
- *Higher costs to fix problems than to prevent*

Possible health effects

- *Increased spread of infectious disease*
- *Coughing, bronchitis*
- *Asthma episodes*
- *Headaches*
- *Allergic reactions*
- *Carbon monoxide poisoning*
- *Legionnaires' disease*

NAS Background

- *EPA identified asthma as a significant new issue three years ago and commissioned the NAS report.*
- *Charge to NAS*
 - *What is the role of the indoor environment re: asthma?*
 - *What are the best mitigation strategies?*
 - *What research is needed?*

NAS Findings In General

- *Asthma is an important disease!*
- *The indoor environment is important!*
- *Biological agents can affect asthmatics who are allergic to them.*
- *Chemical agents can affect all asthmatics.*

Possible effects on our kids

- *Affect their ability to learn*
- *Asthma episodes triggered*
- *Some pollutant harm may be long-lasting or permanent.*

Remember the school's mission!

To teach our kids!

*But that's hard to do when the
kids or teachers are not feeling
well or are medicated or are
absent!*

Bottom Line:

What does poor IAQ cost?

- *Pay for substitutes*
- *Student absences reduce state funding*
- *Liability*
- *Consultant fees during “emergencies”*
- *Lower operating efficiency of HVAC*
- *Costs of relocating staff and students*

Some causes of poor I AQ

- *Reduced ventilation*
- *Building materials and furnishings*
- *Deferred maintenance*
- *Pesticides*
- *Cleaners*
- *School supplies – art, science, etc.*
- *Personal care products*

Major causes of poor I AQ

- *Pollution sources*
- *Improperly operated and maintained HVAC*
- *Building occupants and their activities*

But these aren't Root Causes !



So ... what are "Root" Causes?

1. *Lack of awareness of how everyone's typical activities affect IAQ.*

“Root” Causes (continued)

- 2. Lack of awareness of how important the interaction of school and district staff is to IAQ, i.e. Communication.*

“Root” Causes (continued)

- 3. Lack of awareness by all school staff of a basic knowledge of IAQ in general and the workings of their school, including the mechanics of the school, eg. Ventilation.*

Root Causes Recap

- *Typical activities*
- *Communication*
- *Basic knowledge*



Identify these
in the photos.

Good
House-
keeping
May,
1999

DANGERS IN THE CLASSROOM

There are many possible sources of contaminated air in schools. Where to look for problems in yours:

INADEQUATE FRESH AIR can cause sleepiness and headaches.

CARBON MONOXIDE drawn in through vents can inhibit oxygen intake, causing dizziness, impaired vision, and reduced brain function.

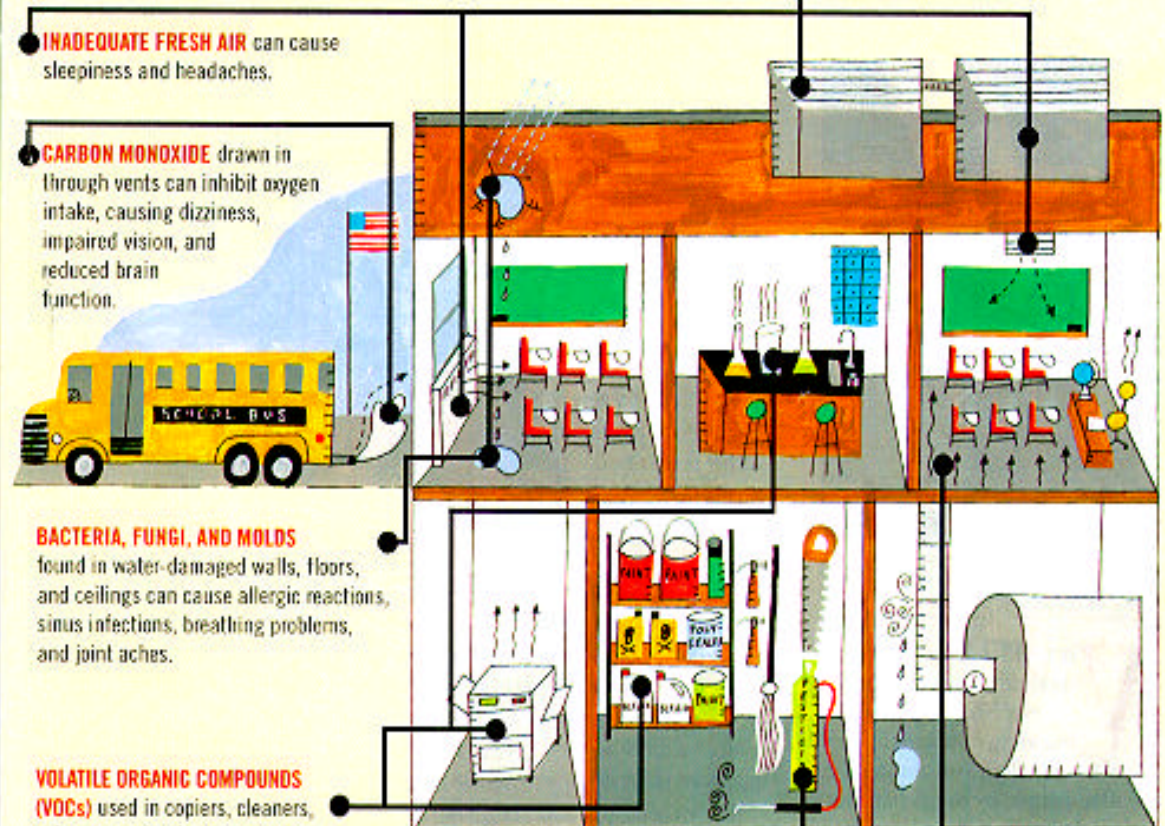
BACTERIA, FUNGI, AND MOLDS found in water-damaged walls, floors, and ceilings can cause allergic reactions, sinus infections, breathing problems, and joint aches.

VOLATILE ORGANIC COMPOUNDS (VOCs) used in copiers, cleaners, solvents, and paints can cause eye, nose, and throat irritation, headaches, and dizziness.

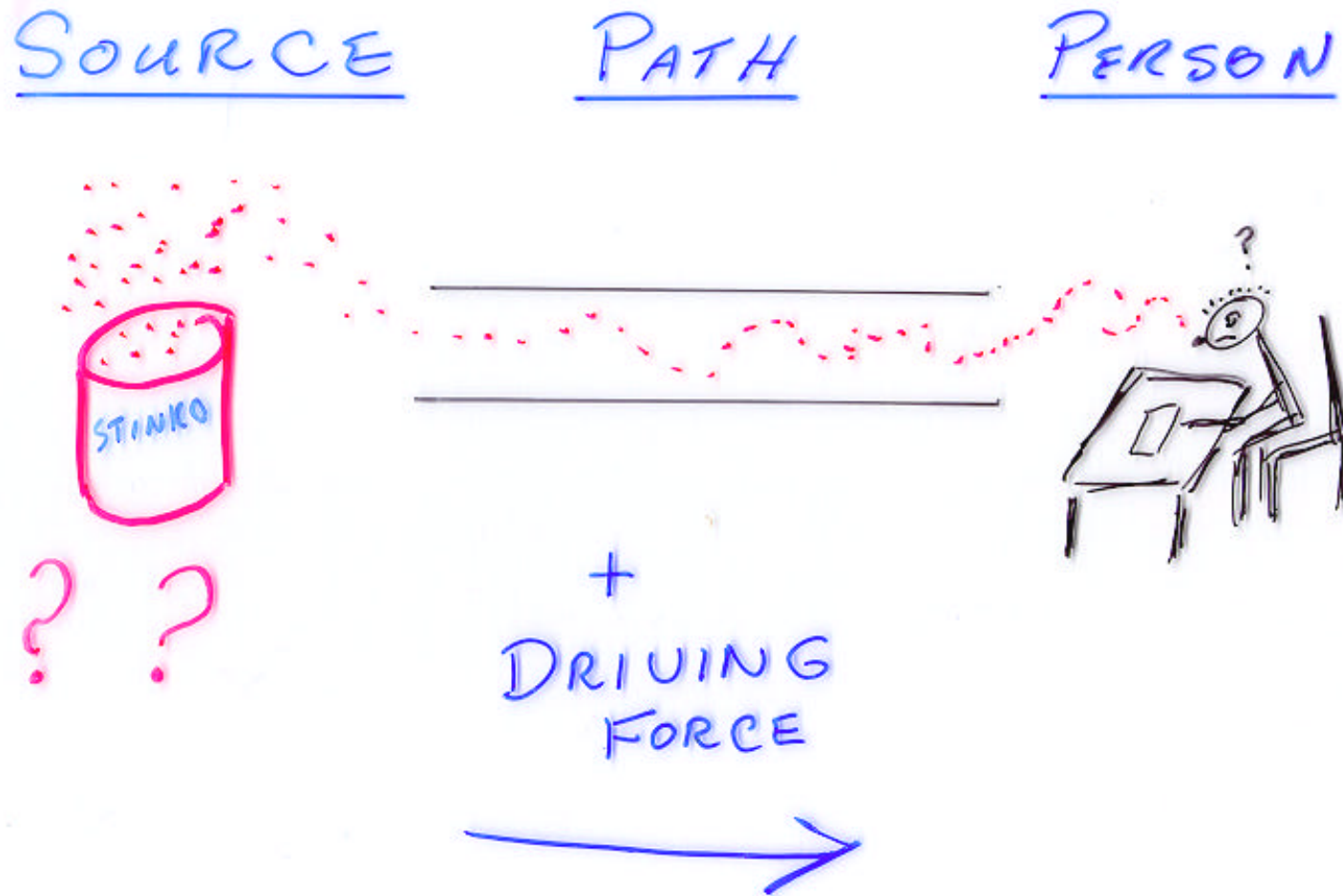
Chronic exposure to some **PESTICIDES** can result in damage to the liver, kidneys, and nervous system.

FORMALDEHYDE in new carpeting, vinyl flooring, or furniture may cause burning and itching of the nose and eyes.

IRRITANT DUST in air-ventilating systems, or from construction, can cause itchy, red eyes; runny nose; and other allergic reactions.



The 3 plus 1 things it takes to create an IAQ problem.



So look for these Root Causes
in the photos

- *Typical activities*
- *Communication*
- *Basic knowledge*

A Cluttered Classroom



It ain't clean enough?



Plants?



Ceiling or ecosystem?

Mold



Algae !

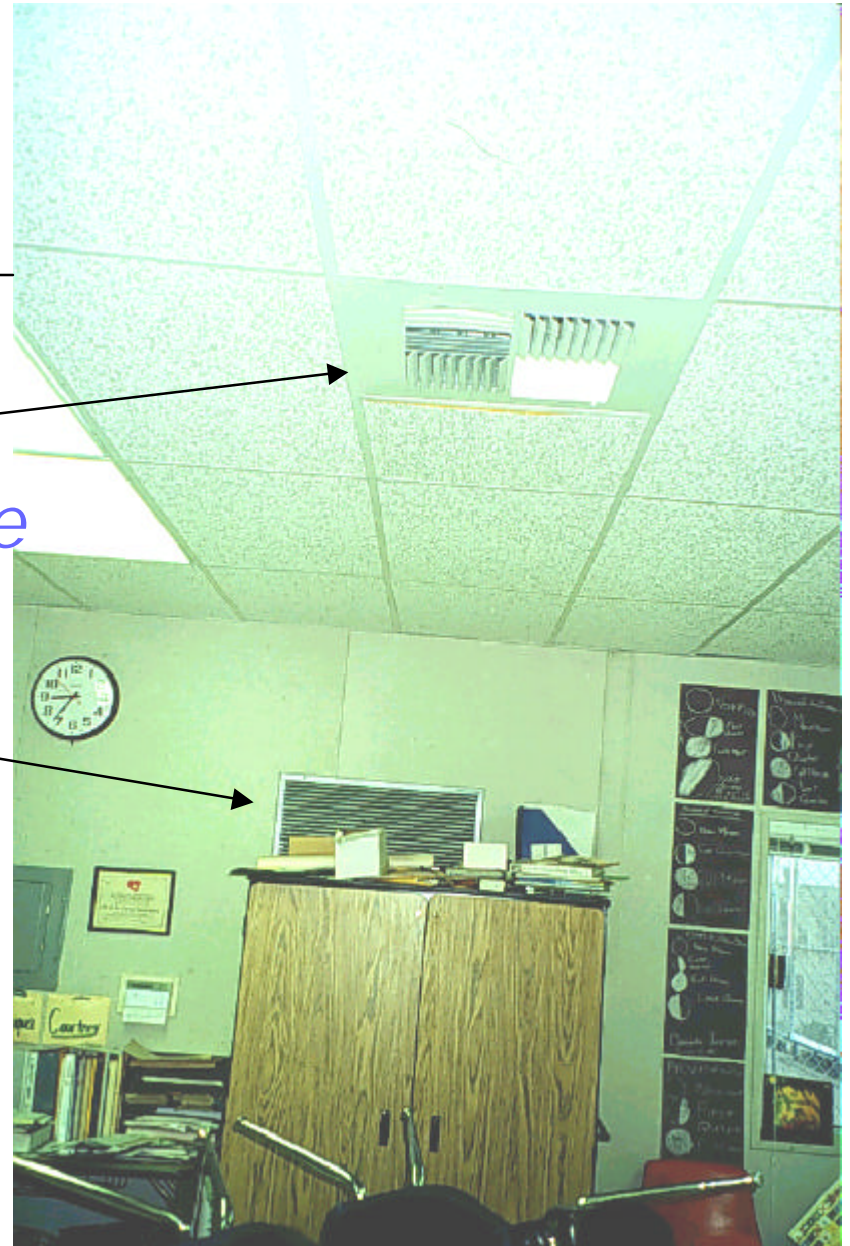
Wabbits in the cwasswoom?



Blocked Return

For air to come out of here

It has to get in there



Dirty filter! (Naughty, naughty)

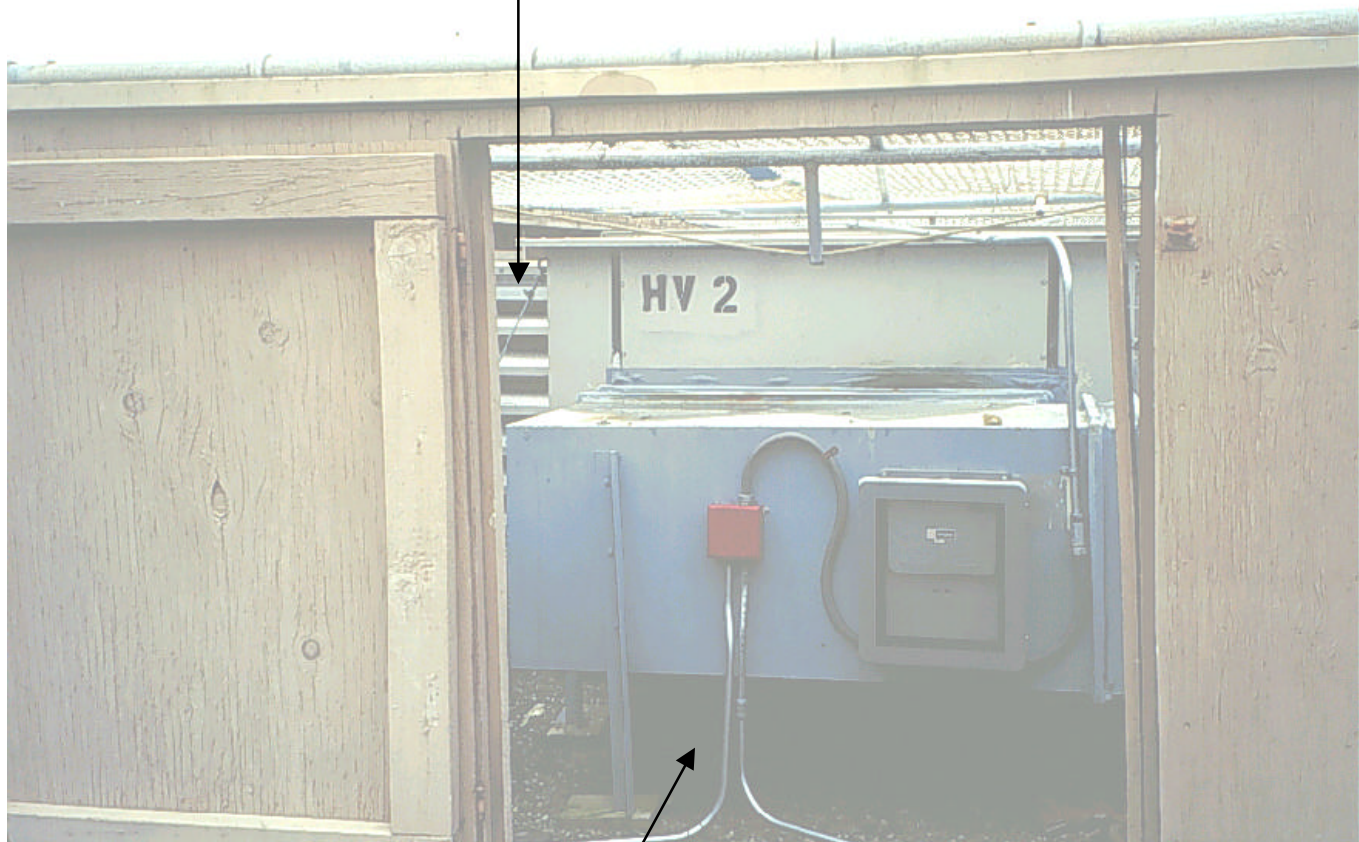


*Uhh ... how do we
get in there?*



How did that smell get back in here?

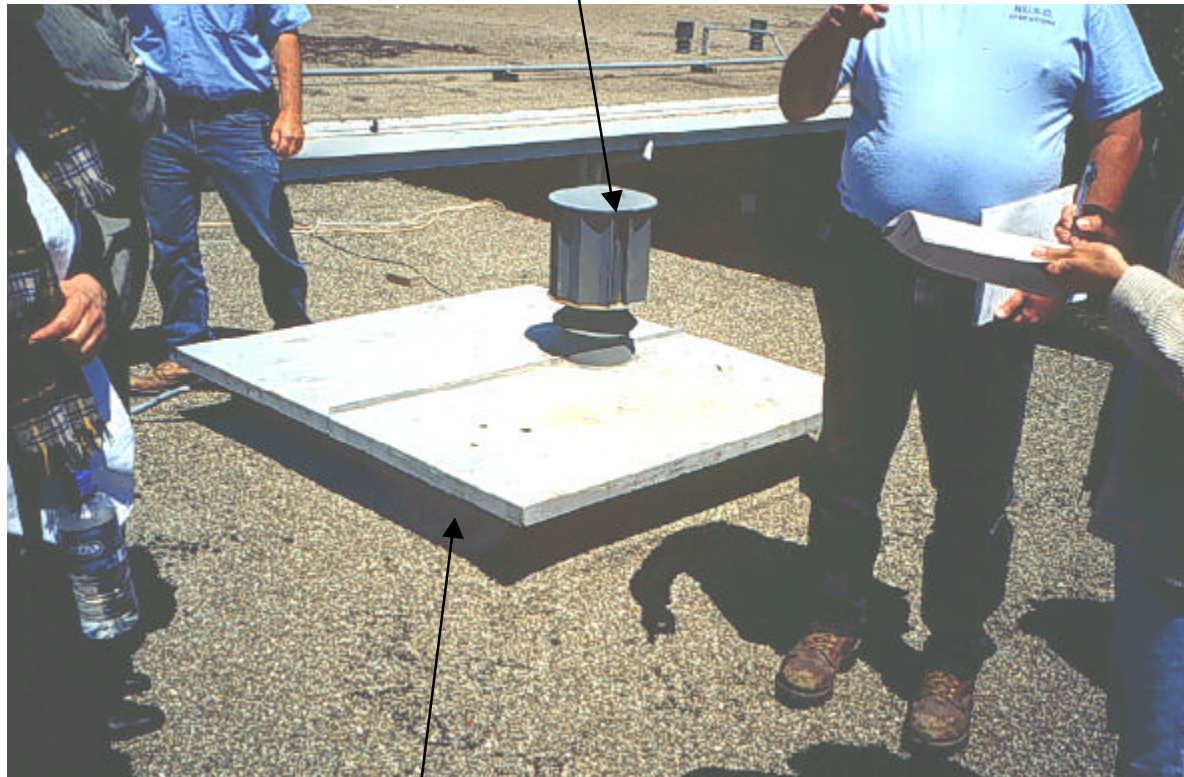
Outside air intake



Bathroom exhaust

How could this happen?

Combustion exhaust



Outside air entry

Good news & bad news!



What's inside the door?



Rat poopies!



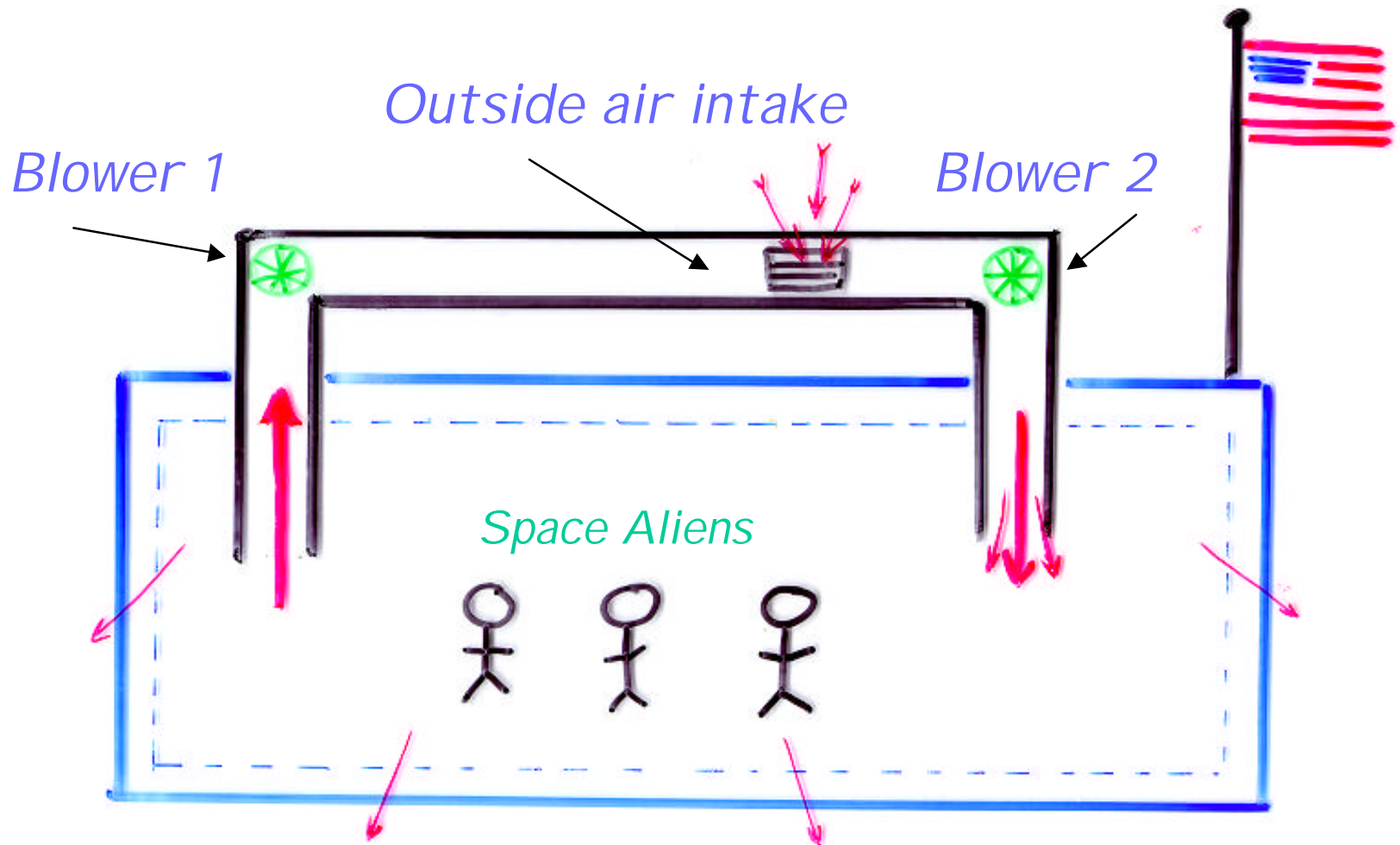
Why does this wall inhale?



Time for a garage sale!



How to screw up a system!



Remember the Root Causes?

- *Typical activities*
- *Communication*
- *Basic knowledge*



So what are the solutions?

- *Education – “eye openers”*
- *Communication tools to build a team.*
- *A plan!*

*You mean like the
Tools for Schools Kit?*

What is the Tools for Schools Kit?

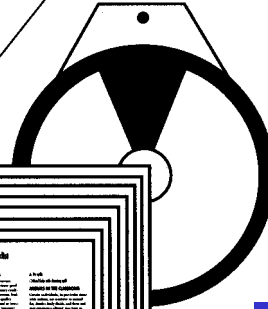
- *A response to the root causes.*
- *A simple, common sense guide to recognizing some no cost / low cost solutions.*
- *A program for making all school-site staff educated advocates for good IAQ practices.*

IAQ Tools for Schools Action Kit

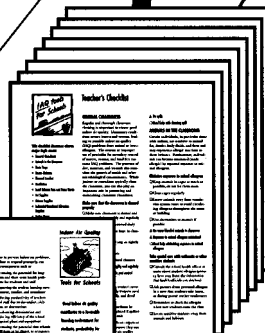


IAQ Coordinator

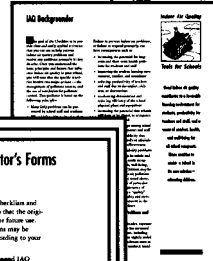
The IAQ Coordinator primarily uses the Coordinator's Guide



IAQ Problem Solving Wheel



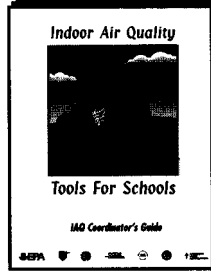
IAQ Checklists



IAQ Backgrounder



IAQ Coordinator's Forms



IAQ Coordinator's Guide

Handouts for Team Members



What comes out of the process?

- *Awareness and educated advocacy*
- *Easy things are fixed*
- *Priorities are determined*
- *Lines of communication are opened*

continued

What comes out of the process?

(continued)

- *Community / staff relations improved*
- *Continuing staff education*
- *Established process for preventing and fixing I AQ problems.*

continued

What comes out of the process?

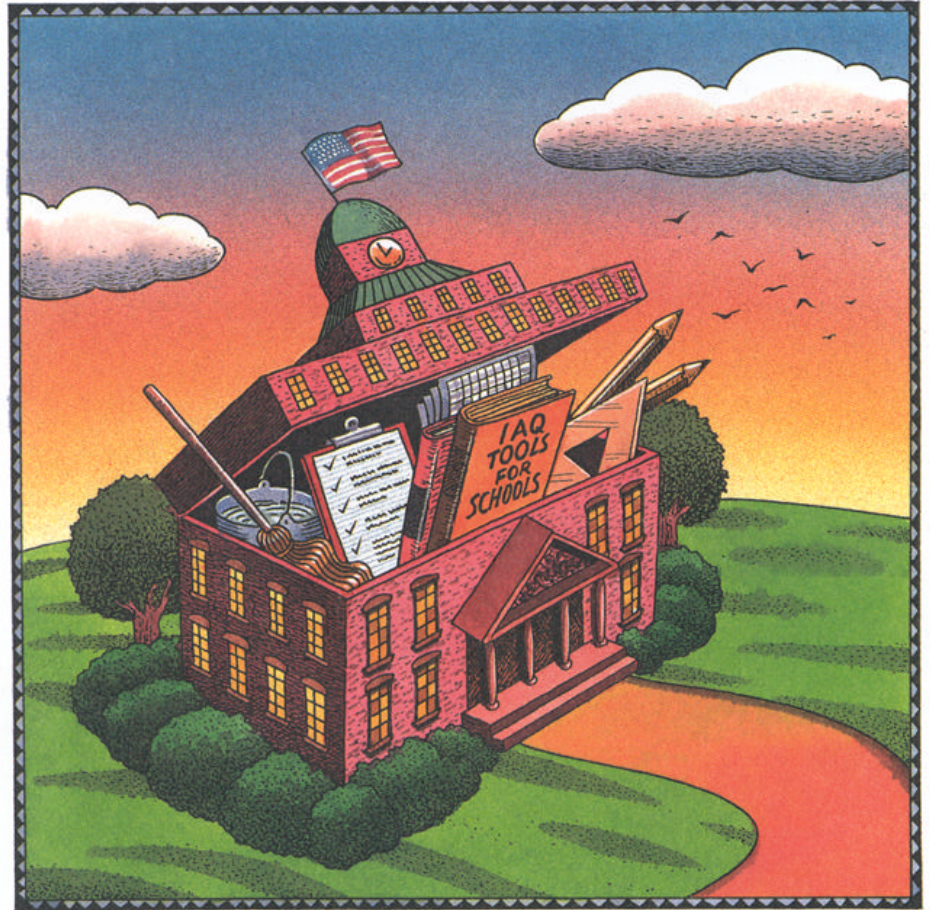
(continued)

*A healthier and more
productive place for teachers
to teach and children to learn!*

*Thanks
for your
attention!*



Indoor Air Quality



Tools For Schools